

CLAIMS

1. An optical signal processor device (14) intended to be fitted to means (10) for optically transmitting an information-carrying signal (S ; S_1 , S_2 , S_3), said device comprising means (20, 22) for suppressing backscattered signals (RS ; RS_1 , RS_2 , RS_3) in the optical transmission means (10) and being characterized in that it comprises an optical propagation medium (16) intended to be connected in parallel with the optical transmission means (10), divertor means (18, 20) for diverting to said optical propagation medium (16) the back-propagated signals (P , RS ; P , RS_1 , RS_2 , RS_3) in the optical transmission means (10), and discrimination means (22) for discriminating between a pump signal (P) intended to be back-propagated in the optical transmission means (10) and a Rayleigh backscattering signal, said discrimination means (22) being connected to the optical propagation medium (16) to suppress the Rayleigh backscattering signal by filtering that passes the pump signal (P) only.

2. An optical signal processor device (14) according to claim 1, characterized in that the divertor means comprise two circulators (18, 20), each disposed at one of the points of connection of the optical propagation medium (16) to the optical transmission means (10), to cause the information-carrying signal to travel in the optical transmission means (10), and to cause the back-propagated signals to travel in the optical propagation medium (16) between the two circulators.

3. An optical signal processor device (14) according to claim 1 or claim 2, characterized in that it further comprises an optical functional module (24) disposed on the optical transmission means (10) between the two circulators (18, 20).

4. An optical signal processor device (14) according to claim 3, characterized in that the optical functional module (24) comprises an optical add/drop multiplexer for adding and dropping wavelengths and/or an optical switch and/or a polarization mode dispersion compensator and/or an optical regenerator.
5. An optical signal processor device (14) according to any one of claims 1 to 4, characterized in that the signal discrimination means (22) comprise a band-pass filter centered on the wavelength of the Raman pump signal (P) intended to be propagated in the optical transmission means (10).
6. An optical signal processor device (14) according to any one of claims 1 to 4, characterized in that the signal discrimination means (22) comprise a Bragg grating fiber whose reflection wavelength corresponds to the wavelength of the Rayleigh backscattering signal derived from the information-carrying signal.
7. An optical signal processor device (14) according to any one of claims 1 to 6, intended to be fitted to means (10) for optically transmitting a plurality of information-carrying signals (S_1 , S_2 , S_3), which device is characterized in that the signal discrimination means comprise a plurality of Bragg gratings (22a, 22b, 22c) disposed in series with reflection wavelengths corresponding to respective wavelengths carrying backscattered signals (RS_1 , RS_2 , RS_3) derived from the plurality of information-carrying signals.
8. An optical signal processor device (14) according to any one of claims 1 to 6, intended to be fitted to means (10) for optically transmitting a plurality of information-carrying signals (S_1 , S_2 , S_3) and characterized in that the signal discrimination means

comprise an optical signal demultiplexer (26a) adapted to transmit only certain signals of predetermined wavelengths and associated with an optical signal multiplexer (26b).

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9. An optical signal processor device (14) according to any one of claims 1 to 8, characterized in that the optical transmission means (10) include a line optical fiber and the optical propagation medium (16) comprises an optical fiber portion.

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10. An optical signal transmission installation comprising a distributed Raman amplification system, characterized in that it further comprises an optical signal processor device (14) according to any one claims 1 to 9.

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